What is claimed is:

1. A noise suppression apparatus comprising a linear prediction analyzing circuit which includes:

an adaptive filter which produces a linear

5    prediction signal based on a first speech signal on which noise is superimposed, and outputs said linear prediction signal as a second speech signal in which said noise is suppressed;

a subtraction unit which obtains a difference

10    between said linear prediction signal and said first speech signal, and outputs said difference as a prediction error; and

a coefficient updating unit which updates coefficients of said adaptive filter based on said first

15    speech signal and said prediction error so as to minimize said prediction error.

2. A noise suppression apparatus comprising a cascade connection of first to n-th linear prediction

20    analyzing circuits, where n is an integer greater than one, and each of said first to n-th linear prediction analyzing circuits includes:

an adaptive filter which produces a linear prediction signal based on a first speech signal on which

25    noise is superimposed, and outputs said linear prediction signal as a second speech signal in which said noise is suppressed;

a subtraction unit which obtains a difference between said linear prediction signal and said first speech signal, and outputs said difference as a prediction error; and

5      a coefficient updating unit which updates coefficients of said adaptive filter based on said first speech signal and said prediction error so as to minimize said prediction error;

said second speech signal output from said n-th

10   linear prediction analyzing circuit which is arranged in a final stage of said cascade connection is an output signal of said noise suppression apparatus, and said second speech signal output from each of said first to (n-1)-th linear prediction analyzing circuits is supplied to one of the

15   second to n-th linear prediction analyzing circuits which is arranged in a subsequent stage as said first speech signal.


3. A noise suppression apparatus according to claim

20   2, wherein each of said first to n-th linear prediction analyzing circuits includes,

a multiplier which obtains a product of said prediction error and a predetermined constant, and

an adder which obtains as a third speech signal

25   a sum of said product and said linear prediction signal, and

said third speech signal in said n-th linear

prediction analyzing circuit, instead of said second speech signal, is said output signal of said noise suppression apparatus, and said third speech signal output from each of said first to (n-1)-th linear prediction analyzing circuits,

5      instead of said second speech signal, is supplied to one of said second to n-th linear prediction analyzing circuits which is arranged in a subsequent stage as said first speech signal.

10      4.  A noise suppression apparatus according to claim 2, wherein each of said first to n-th linear prediction analyzing circuits includes,

        a multiplier which obtains a product of said first speech signal and a predetermined constant, and

15        an adder which obtains as a third speech signal a sum of said product and said linear prediction signal, and

        said third speech signal in said n-th linear prediction analyzing circuit, instead of said second speech

20      signal, is said output signal of said noise suppression apparatus, and said third speech signal output from each of said first to (n-1)-th linear prediction analyzing circuits, instead of said second speech signal, is supplied to one of said second to n-th linear prediction analyzing circuits

25      which is arranged in a subsequent stage as said first speech signal.

5. A noise suppression apparatus comprising a linear prediction analyzing circuit which includes:

a lattice filter which produces a linear prediction signal based on a first speech signal on which
5 noise is superimposed; and

a subtraction unit which subtracts said linear prediction signal from said first speech signal, and outputs a remainder after subtraction, as a second speech signal in which said noise is suppressed.
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